What a Fish Health Center Is

U.S. Fish and Wildlife Service fish health centers are resource centers that provide service, expertise, and information supporting the Service's mission to promote and protect aquatic animal health. Their work not only contributes to health, survival, restoration, and enhancement of fish and other aquatic species, it also supports hatchery operations to provide quality fish. Each center works with fish research centers, universities, and private companies to serve fish growers in producing healthy fish for the future.

By fostering a cooperative approach to comprehensive fish health, the centers can prevent catastrophic losses to the resource. Staff assist in development of management strategies and applied research to support the protection of wild stocks and restoration of threatened species. They also educate the public about comprehensive fish health and its significance to healthy aquatic ecosystems.

Microscopic view of fish red blood cells

Histology, the study of cells and tissues, is an important discipline at fish health centers.

Region 1 Fish Health Centers

For more information on U.S. Fish and Wildlife Service fish health centers in Region 1 contact:

Olympia Fish Health Center
3704 Griffin Lane, Suite 101
Olympia, Washington 98501
(360) 753-9046

Dworshak Fish Health Center
P.O. Box 18
Ahsahka, ID 83520
(208) 476-4591

Lower Columbia River Fish Health Center
61552 SR 14
Underwood, WA 98651
(509) 493-3156

California-Nevada Fish Health Center
24411 Coleman Fish Hatchery Road
Anderson, CA 96007
(916) 365-4271

The U.S. Fish and Wildlife Service manages fish hatcheries and national wildlife refuges throughout the country for the continued conservation, protection, and enhancement of our fish and wildlife resources and their habitats.

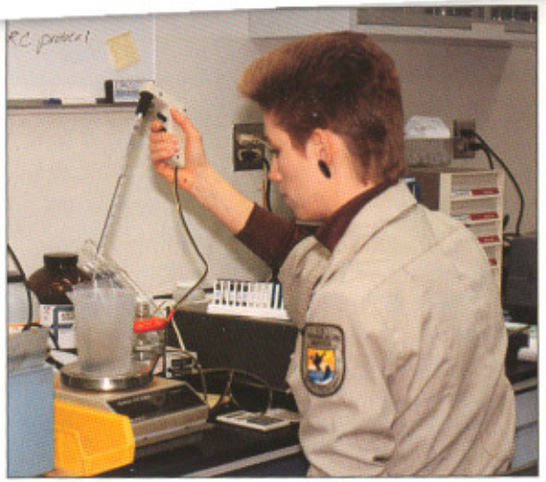
U.S. Department of the Interior
Fish and Wildlife Service

October 1996

U.S. FISH AND WILDLIFE SERVICE

REGION 1 FISH HEALTH CENTERS

Contributing to fish health, survival, restoration, and enhancement



Processing tissue samples for viral testing

Fish may be injected with vaccines or drugs to help them stay healthy.

Inoculating test plates to check for viruses

What Happens at Region 1 Fish Health Centers

COMPREHENSIVE FISH HEALTH

The activities of Western Region (Region 1) fish health centers include frequent checks on the general health of fish within hatcheries as well as intensive scrutiny for particular fish pathogens recognized as dangerous to fish, and applied research and monitoring of selected wild fish stocks. Fish health center staff recommend treatments for specific fish diseases and give advice on how to prevent or minimize the impacts of disease on fish populations. Fish health center personnel must apply the knowledge of several scientific disciplines including fish biology, microbiology, epidemiology, toxicology, pathology, physiology, histology, and genetics. They must also understand the conditions, individual requirements, and interactions of wild and cultured fish and how those factors influence disease and overall aquatic animal health.

Why Fish Health Centers are Necessary

UNDERSTANDING DISEASE

Fish, like all animals, are subject to a variety of diseases which can lead to death. They may suffer from environmental, nutritional, or infectious diseases caused by pathogens — organisms such as parasites, bacteria, or viruses — which are capable of causing disease when a host's resistance is lowered. Because diseases may be a problem among fish raised in captivity, it is important for fish culturists to understand the nature of fish diseases.

In natural conditions fish are exposed to pathogens and will sometimes display symptoms of disease. Hatchery fish are exposed to the same pathogens found in natural systems in addition to certain stressful conditions common in hatcheries such as fluctuating water temperatures, changes in water quality, overcrowding, handling, and transport. Fish can handle these stresses to a degree, and fish health center and hatchery personnel work together to decrease stressful conditions in order to prevent disease outbreaks from occurring. Fish health center personnel may also recommend treatments such as administering vaccines or antibiotics.

WATCHING FOR WARNING SIGNS OF DISEASE

In spite of the best care and all the preventive efforts, disease may occur and it is vital to detect the disease as soon as possible. One way to detect a disease at its onset is by observing the fish behavior. Certain abnormal behavior — lack of feeding, flashing, gathering at water inflow, and gasping at surface — as well as physical signs — blisters, swollen bellies, protruded eyes, bloody areas, discolored areas, heavy mucus, and growths on the body — indicate a disease outbreak may be starting and immediate action will be necessary.

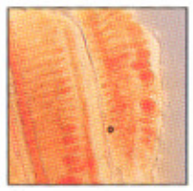
Host-Pathogen-Environment Relationship

Fish diseases are the result of interaction between a pathogen, a fish (host), and a poor environment. Even if the pathogen is present, some disease outbreaks will not occur unless the environment becomes too degraded for the fish.

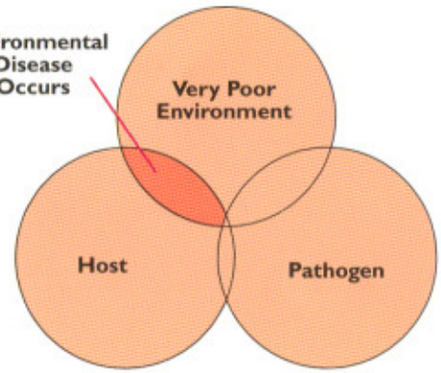
It is easier to visualize these relationships as three circles that represent the host, the pathogen, and the environment. These circles are continually interacting in various ways. The host must always be present to see a disease occurring, but in reality the environment is always present also. If the environment is very poor, the host can suffer from environmental diseases. If the environment is slightly poor and a pathogen is present, infectious diseases may occur.

ENVIRONMENTAL DISEASE

In a very poor environment the host may suffer from environmental disease even when a pathogen is not present.

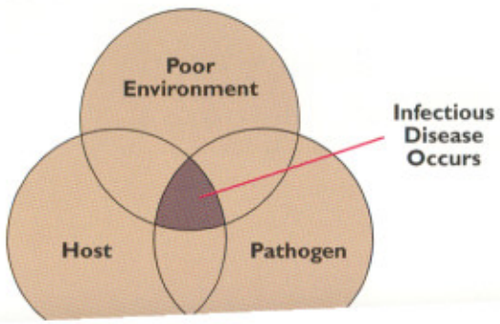


Some environmental diseases cause damaged gills in fish.



INFECTIOUS DISEASE

The combination of a poor environment and a pathogen may create a scenario for infectious disease to occur.



Location of Region 1 Fish Health Centers

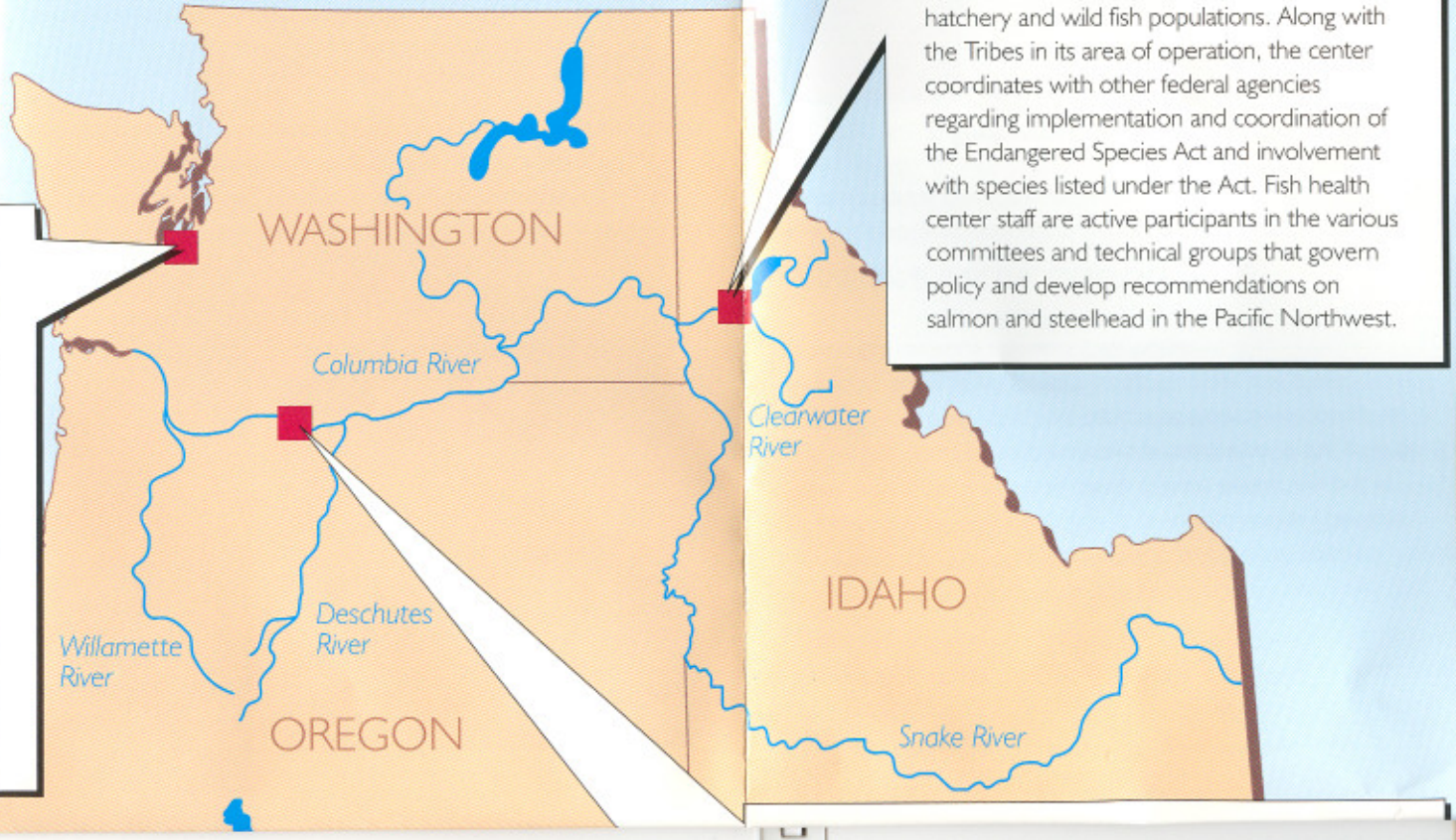
The U.S. Fish and Wildlife Service maintains nine fish health centers nationwide, four of which are located within Region 1.

Wild fish health surveys involve working in the environment, not just in the lab.

Fish health biologists are involved in outreach activities such as teaching courses and providing information to youth.

Olympia Fish Health Center

Located in Olympia, Washington, the Olympia Fish Health Center provides fish health services within Puget Sound, Olympic Peninsula and mid-Columbia Basin. The staff includes certified fish pathologists, a federally-accredited veterinarian, and technicians who provide comprehensive aquatic health services to national fish hatcheries in these areas. When requested, this center also provides disease diagnostics, histology support, and fish pathogen surveys to Indian Tribes, other federal agencies, states, and private aquaculture. The Olympia Fish Health Center is actively involved with professional societies and agencies that deal with fish health and diseases in both captive and wild fish. Keeping fish healthy for restoration, recovery, and enhancement of wild salmon, steelhead, and other threatened fish is the goal of the center.



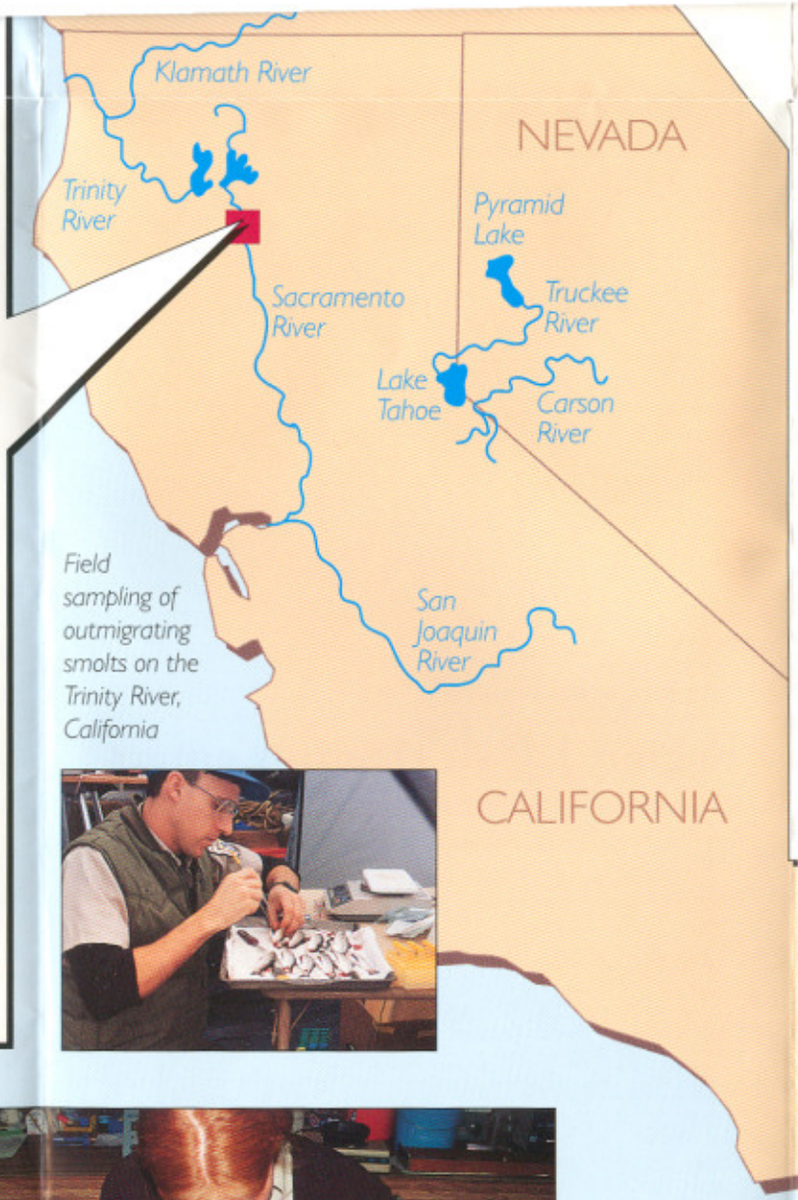
Dworshak Fish Health Center

The Dworshak Fish Health Center is located in the southern Panhandle of Idaho between the historic communities of Ahsahka and Orofino. Originally built in 1969 as part of the Dworshak National Fish Hatchery, the center provides fish health services within Idaho, eastern Washington, and eastern Oregon. Federally-funded national fish hatcheries within Idaho receive health diagnostic and inspection services from the center. In addition, the center works in cooperation with other federal, state, and Tribal agencies to survey, sample, and analyze hatchery and wild fish populations. Along with the Tribes in its area of operation, the center coordinates with other federal agencies regarding implementation and coordination of the Endangered Species Act and involvement with species listed under the Act. Fish health center staff are active participants in the various committees and technical groups that govern policy and develop recommendations on salmon and steelhead in the Pacific Northwest.

California-Nevada Fish Health Center

The California-Nevada Fish Health Center is located at the northern edge of California's Central Valley. The staff of certified fish pathologist, fishery biologists, and technicians provide comprehensive fish health services within California and Nevada, with full capability in viral, bacterial, and parasitic assays for salmonid pathogens. The center is an active participant in the endangered Sacramento Winter-run Chinook recovery plan through the captive broodstock program and Coleman National Fish Hatchery supplementation efforts. The center also supports the Lahontan National Fish Hatchery and provides inspection services to the Pauite tribe of Pyramid Lake and the Nevada Division of Wildlife.

Since 1991, a large part of the center's efforts have been directed toward health and physiology monitoring of both hatchery and wild Chinook salmon in the Trinity, Klamath, and Sacramento rivers. As young salmon mature, physiological changes occur to prepare them for the salt water environment. This process, termed "smoltification," is assessed by various physiological functions and metabolic changes such as immune response, energy utilization and blood chemistry. Through monitoring and assessment of stocks during downstream migration, we gain a better understanding of factors that affect freshwater and saltwater survival and play a role in the successful return of adults.



Field sampling of outmigrating smolts on the Trinity River, California

Lower Columbia River Fish Health Center

In 1953, the first hatchery biologist in Region 1 staffed the Little White Salmon Laboratory, predecessor to the present-day Lower Columbia Fish Health Center. The center is now located on the grounds of the Spring Creek National Fish Hatchery, 60 miles east of Portland on the scenic Columbia River. The center is staffed by fish pathologists, microbiologists, and technicians. Its primary purposes are to diagnose fish diseases, inspect fish for pathogens, and provide remedial recommendations for treatments that may include altering hatchery practices to improve general fish health management. These services are routinely provided for seven lower Columbia River federal fish hatcheries and two Tribes, and for state and private facilities on request. The center's mission supports the National Fish Health Policy and the Endangered Species Act. Work done by the center facilitates the restoration of significant anadromous fishery resources in the Columbia Basin by ensuring healthy hatchery stocks and minimal impact on wild and natural stocks. Fish health center staff participate in various Pacific Northwest committees and co-manager groups, furthering information transfer and cooperative efforts in aquatic resources conservation.

Preparing tissue samples to detect viruses